REMARKS

Claims 2, 4 to 10, and 12 to 32 are pending in this application.[1] Of these, claims 4 and 21 to 23 are independent, and claims 8 and 9 have been withdrawn from consideration. Favorable reconsideration and further examination are respectfully requested.

Initially, the Office Action requests that Figs. 1 to 4 be labeled as prior art. As shown above, Applicants have so amended the drawings. Withdrawal of the objection thereto is therefore respectfully requested.

Claims 1 to 4, 7, 10, 12, 16, 17, 19 and 21 were rejected over U.S. Patent No. 6,441,703 (Panasik '703) in view of U.S. Patent No. 6,744,336 (Goetz); claims 5, 6, 11, 13 and 18 were rejected over Panasik '703 and Goetz in view of U.S. Patent No. 6,768,396 (Klee); claims 14 and 20 were rejected over Panasik '703 and Goetz in view of U.S. Patent No. 5,872,493 (Ella); and claim 15 was rejected over Panasik '703 and Goetz in view of U.S. Patent No. 6,087,198 (Panasik '198). As shown above, Applicants have amended the claims to define them with greater particularity. In particular, amended claim 4 includes features of previous claim 4 and dependent claims 7, 11, and 13; new claim 21 includes features of previous claim 4 and dependent claims 7 and 21; new claim 22 includes features of previous claim 4 and dependent claims 5, 7 and 21; and new claim 22 includes features of previous claim 4 and dependent claims 11, 14 and 21. In view of these amendments, withdrawal of the art rejections is respectfully requested.

Amended independent claim 4 recites that the dielectric layer above the layer structures comprises a hermetic encapsulation for the plurality of resonators, is above substantially an

[1] The Examiner is urged to independently confirm this recitation of the pending claims.

entire surface of the wafer to implement an acoustic mirror above the plurality of resonators, and is a low-k dielectric. The applied art is not understood to disclose or to suggest these features of claim 4. In this regard, the Office Action equates the dielectric layer of the claims to the SiO_2 and Tungsten layers described in column 5 of Panasik '703. The Office Action also refers to Figs 1, 5 and 6 for disclosure of planar dielectric layers. Applicants, however, note that there is no disclosure whatsoever in Panasik of hermetic encapsulation using a dielectric layer having the properties noted above.

In view of the deficiencies of Panasik '703, the Office Action relies on Goetz. In particular, the Office Action states that the "Goetz provides the general teaching that SiO_2 may provide a hermetic seal for an acoustic wave device"[2] In particular, the Office Action relies on the following statement from Goetz[3]:

> The passivation layer **430** may comprise any known or hereafter discovered layer that may provide a hermetic seal. In one particularly advantageous embodiment of the present invention, the passivation layer **430** comprises a material selected from the group consisting of Silicon Carbide, Silicon Dioxide and Silicon Nitride, however, many other materials are within the scope of the present invention. Additionally, the passivation layer may be formed, possibly using a plasma enhanced chemical vapor deposition (PECVD) or other similar process, to a thickness ranging from about 250 nm to about 1200 nm. It should be noted, however, that the present invention should not be limited to the above-mentioned thicknesses, and that many other thicknesses may be used.

[2] Page 4 of the Office Action
[3] Col. 4, lines 46 to 53 of Goetz

This statement, however, is referring to the structure shown in Fig. 4 below, in particular, to passivation layer 430.

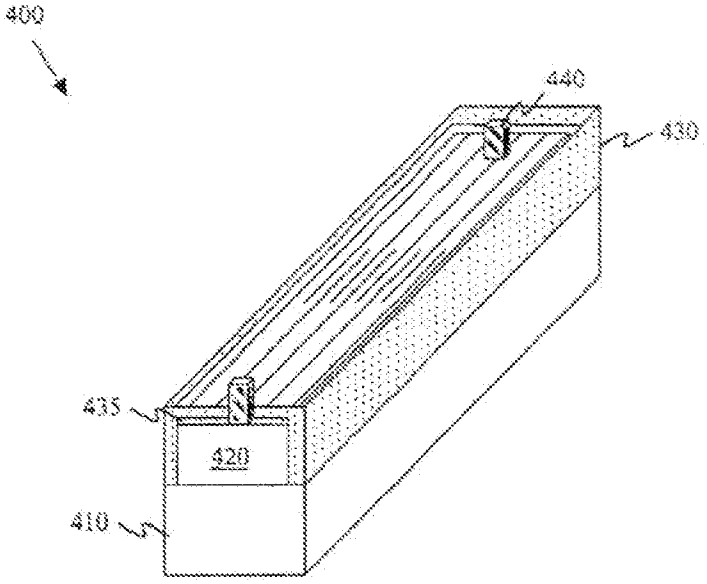

FIGURE 4

In Fig. 4 above, layer 43 is a passivation layer, and clearly extends over the side of SAW circuit conductors 420. This is how the passivation layer of Goetz achieves its hermetic seal. The dielectric layers referred to in Panasik '703 are reflector layers, not passivation layers. Accordingly, Applicant submits that there is no motivation to extend the reflector layers of Panasik '703 in the manner that appears to be suggested in the Office Action, i.e., to extend them over the sides of the resonators depicted in Panasik '703. That being the case, Applicants submit that Panasik '703 and Goetz fail to render claim 4 obvious.

The remaining references are not understood to add anything that would remedy the deficiencies of Panasik '703 and Goetz via-à-vis claim 4. Accordingly, claim 4 is believed to be patentable over the art.

New independent claim 21 recites that the dielectric layer comprises a hermetic encapsulation for a plurality of resonators, is above substantially an entire surface of the wafer and over the plurality of resonators, and a top surface of the dielectric layer is substantially planar such that thicknesses of the dielectric layer to implement the acoustic mirror are above the plurality of resonators. As explained above with respect to claim 4, the applied art is not understood to disclose or to suggest use of a dielectric layer in an acoustic mirror for hermetic encapsulation. Furthermore, the art is not understood to disclose or to suggest that the plurality of resonators are electrically interconnected by electrode layers of the resonators to form at least a portion of a circuit.

In this regard, Panasik '703 (which was cited against former claim 21) shows resonators 54 or 56 atop reflector layers (112, 154 and 210 – see, e.g., Fig. 3 below). The acoustic reflector array that includes the reflector layers "is coupled to an electrode of the first acoustic resonator (54, 56) and to an electrode of the second acoustic resonator (54, 56)"[4]. There, however, is no indication that the resonators are electrically interconnected by electrode layers of the resonators.

[4] Abstract of Panasik '703

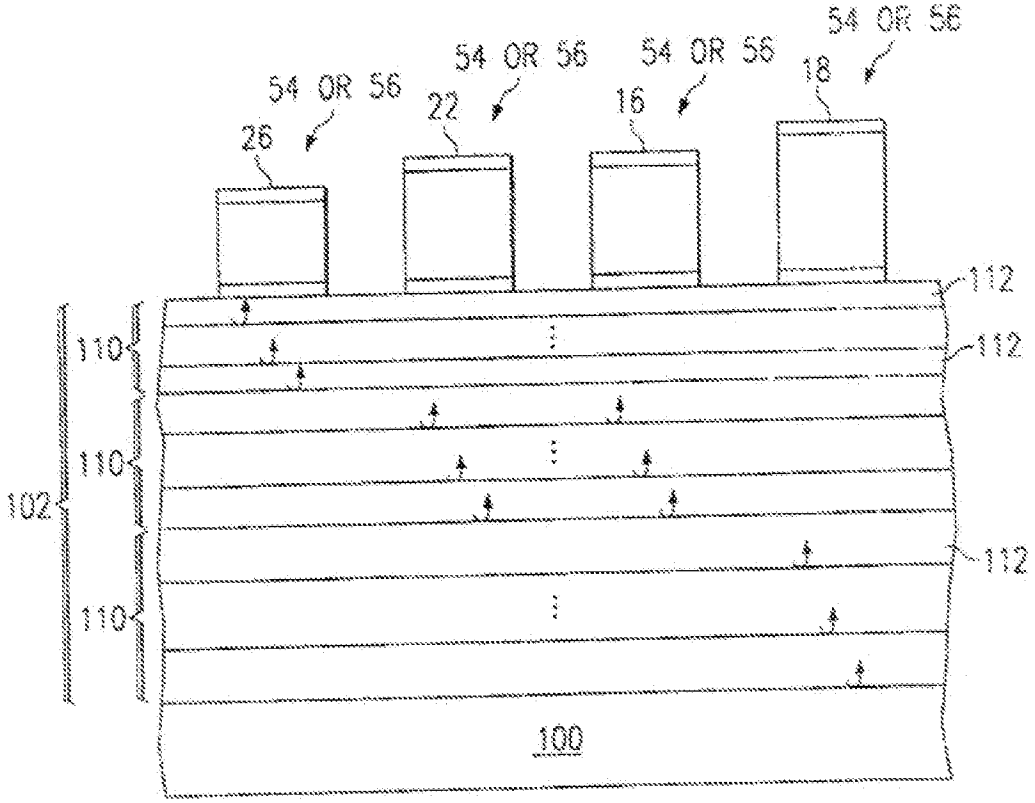

FIG. 3

In this regard, the Office Action cites Fig. 2 and column 4 for their alleged disclosure of the features of claim 21.[5] Granted, Fig. 2 does show interconnection of resonators 54 and 56. Goetz, however, does not specify how the connections are made. In this regard, connections may be made by ways other than the electrode layers (see, e.g., pages 20 and 21 of the subject application, which describes various wiring combinations). For at least the foregoing reasons, claim 21 is believed to be patentable over the art.

[5] See page 4 of the Office Action

The remaining references are not understood to add anything that would remedy the deficiencies of Panasik '703 and Goetz via-à-vis claim 21. Accordingly, claim 21 is believed to be patentable over the art.

Amended independent claim 22 recites that the dielectric layer above the layer structures comprises a hermetic encapsulation for the plurality of resonators that comprises a termination of the dielectric layer outside of the resonators and on an upper surface of the wafer, and is above substantially an entire surface of the wafer to implement an acoustic mirror above the plurality of resonators. As explained above with respect to claim 4, Panasik '703 and Goetz do not disclose or suggest these features. In claim 22, furthermore, it is specified that the hermetic encapsulation comprises a termination of the dielectric layer outside of the resonators and on an upper surface of the wafer. Goetz, in stark contrast, shows termination of its passivation layer on the sides of its structure (see Fig. 4 of Goetz above). Also, as explained above with respect to claim 21, the art is not believed to disclose or to suggest that electrode layers of the resonators interconnect the resonators to form a circuit. For at least the foregoing reasons, claim 22 is believed to be patentable over the art.

Amended independent claim 23 recites hermetic encapsulation via the dielectric layer and interconnection of resonators via the electrode layers. As explained above, these features are not believed to be disclosed or suggested in the art. Furthermore, claim 23 recites that the wafer has a surface comprising solderable contacts that are electrically connected to the plurality of resonators or to one or more of a plurality of active and/or passive components integrated with the plurality of resonators in circuits. The art is not understood to disclose or to suggest this

feature. In this regard, the Office Action rejected claim 14 (which recites these features as well) over Ella. Ella shows solderable contacts (e.g., 19a, 19b, 19c); however, it does not show a plurality of active and/or passive components integrated with the plurality of resonators in circuits, including solderable contacts therefor. Panasik '703 and Goetz are not believed to remedy this deficiency. Accordingly, claim 23 is believed to be patentable.

Each of the dependent claims is also believed to define patentable features of the invention. Each dependent claim partakes of the novelty of its corresponding independent claim and, as such, has not been discussed specifically herein.

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

In view of the foregoing amendments and remarks, Applicants respectfully submit that the application is in condition for allowance, and such action is respectfully requested at the Examiner's earliest convenience.

Finally, Applicants are submitting a copy of the original declaration in this case to substitute for the declaration currently on file. In the declaration currently on file, the "attached hereto" box was checked post-signing.

Applicants' undersigned attorney can be reached at the address shown below. All telephone calls should be directed to the undersigned at 617-521-7896.

Please apply any fees or credits due in this case, which are not already covered by check, to Deposit Account 06-1050 referencing Attorney Docket No. 14219-078US1.

Respectfully submitted,

Date: May 7, 2007 (Monday)

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